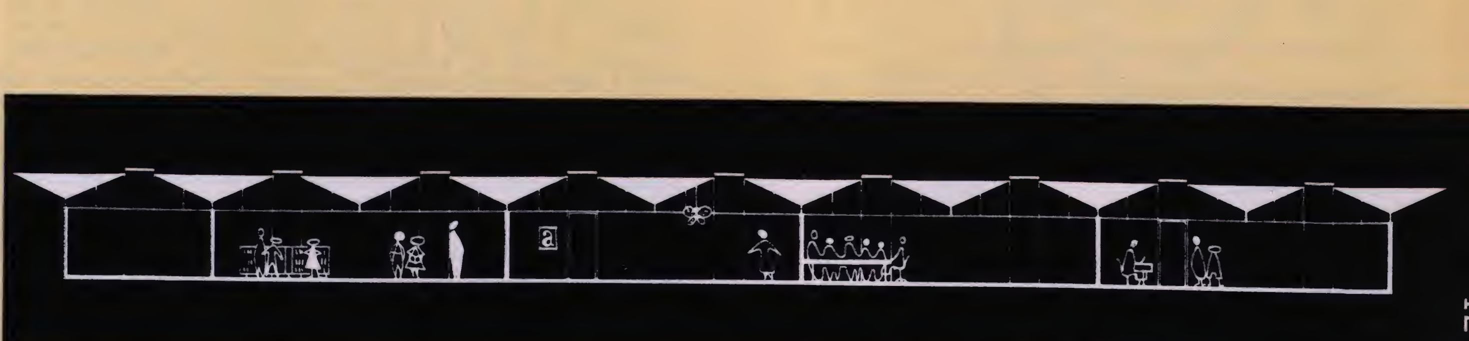
A.I.A. FILE NO. 12-J

OWENS-ILLINOIS

20b
Ow

pre-cast grid

TOPLITE PANELS



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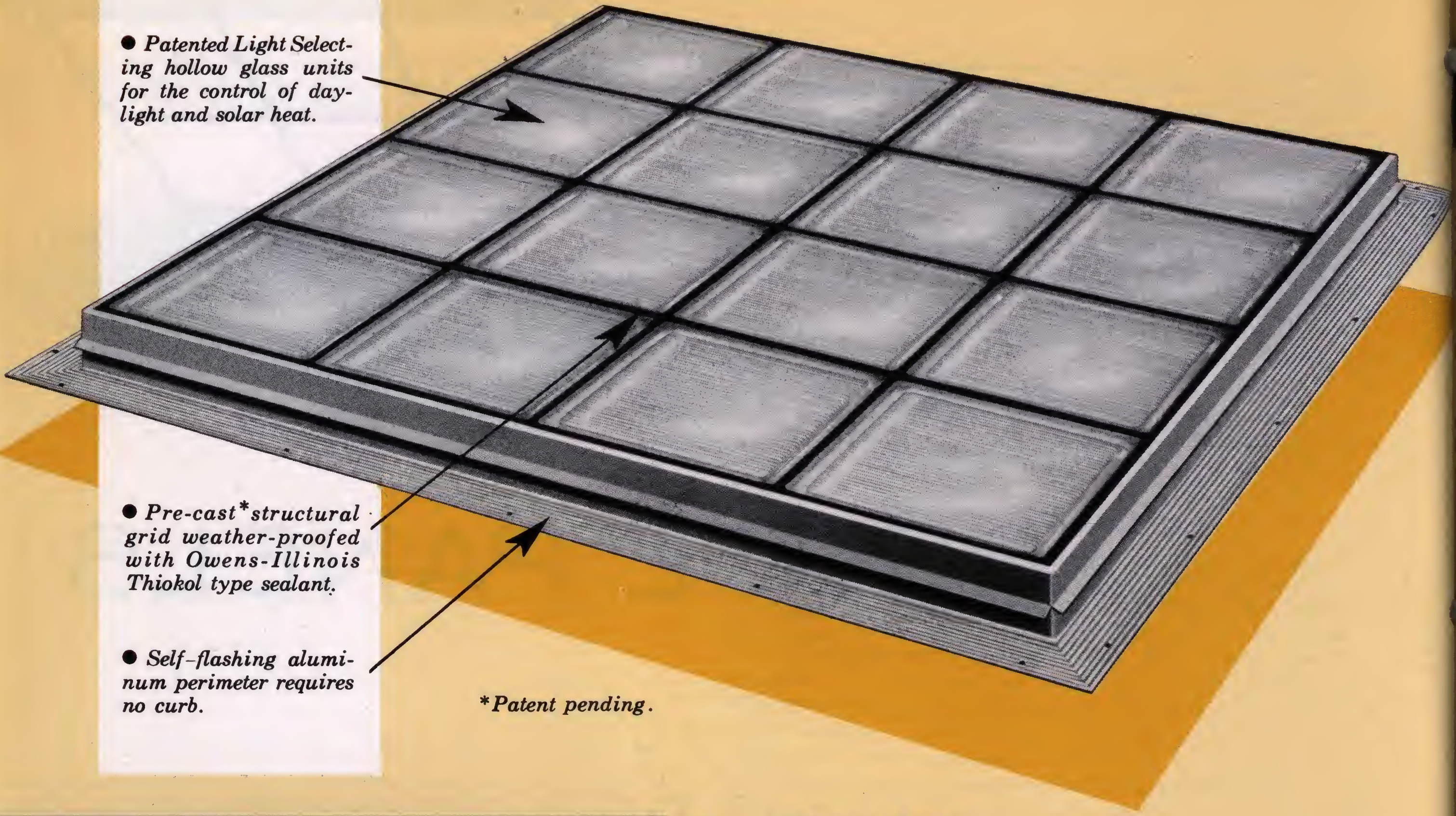
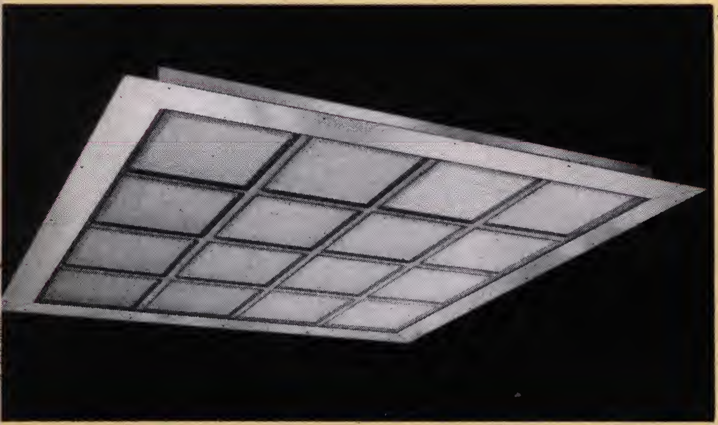


- *Patented Light Selecting hollow glass units for the control of daylight and solar heat.*
- *Pre-cast*structural grid weather-proofed with Owens-Illinois Thiokol type sealant.*
- *Self-flashing aluminum perimeter requires no curb.*

**Patent pending.*



Underside of panel
shows thin-ribbed supporting grids in new pre-cast construction which improves appearance and increases light transmission.

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Description

Owens-Illinois Pre-cast Toplite Panels are factory fabricated in a number of sizes ready for easy installation in the roof. The glass units are spaced 1 foot on centers and are supported by a reinforced structural grid formed of a new and revolutionary high strength cementitious material. The grid thus formed is surrounded by a self-flashing aluminum perimeter that permits installation without a curb. (Curb type Panels are available at a slight extra cost).

Exposed top surfaces between glass units and between glass units and aluminum perimeter, are finished with a Thiokol type sealant developed especially for this product.

Strength

Panels are extremely strong. Four by four panels have been loaded to 225 pounds per square foot with very little deflection and no sign of failure. Panels up to six feet spans will support live loads in excess of 40 pounds per square foot with a safety factor of over 4.

Durability

Panels have been tested under extreme conditions. They have been subjected to temperatures from 40° below zero to 150° above. For long periods they have been exposed to below zero weather conditions while the room side was subjected to completely saturated air conditions at temperatures up to 190°.

Thermal Insulation

The overall insulating value of Toplite Panels is high because of the hollow glass units and the thin structural ribs insulated with Thiokol. (See tables on page 15).

T-5-584 - Copyright Kimble Glass Company, subsidiary of Owens-Illinois. Printed in U.S.A.

PRE-CAST TOPLITE PANELS

20b
Ow

Improved in Quality . . .
Greatly Reduced in Price

Owens-Illinois Toplite Roof Panels have been in service in some of the country's best buildings for a number of years. They have been well accepted as a quality product possessing daylighting and solar heat characteristics not found in any other type of skylight.

Their use has been limited only by high cost due to a complicated manufacturing process.

For the past two years Owens-Illinois has had under development at their Toledo Technical Center, a new type Toplite Panel. This work has resulted in a product embodying all the advantages of O-I solar selecting glass units in an extremely strong and durable structural panel.

These new type panels lend themselves to precision mass production techniques that insure superior quality at a substantially reduced cost. Lower production costs make it possible for Owens-Illinois to offer famous Toplite Panels at substantially reduced prices.

This catalog presents detailed technical information about these panels.

……

Control of Solar Heat and Light

Because there is a much greater quantity of daylight available on a horizontal surface than on a vertical surface, the introduction of daylight through roof openings presents special problems with respect to glare and solar heat. These two problems have been solved in the design of the Owens-Illinois Toplite.

A completely new concept in daylight transmission and solar heat control has been incorporated in the design of Toplite.* The glass units make use of light selecting prisms which transmit a high percentage of the light from the low winter sun and from the north sky, but reject the major portion of the light from the high and hot summer sun.

The result is more uniform transmission of daylight throughout all seasons of the year and maximum rejection of solar heat during hot months.

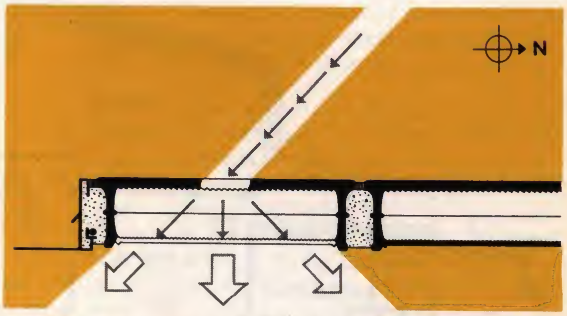
The light selective principle of Toplite is illustrated in the three diagrams at the right. They show an enlarged cross-section of the prisms (in the top face of the glass unit) which accept or reject light. Light transmitted by these prisms is directed and diffused through the cavity of the block. The pattern of light entering the building is so controlled and diffused *regardless of sun position.*

New type Pre-cast Panels transmit substantially more light than earlier Panels without sacrificing their light and solar heat controlling characteristics.

When Toplite Panels are properly oriented (See instructions on page 8) solar heat transmission during hot summer months is low. The prisms in the top face are designed to act like mirrors thus reflecting both heat and light from the high summer sun before they enter the glass unit. This "mirror-like" phenomenon may be observed by looking down upon any Toplite unit from a southernly direction.

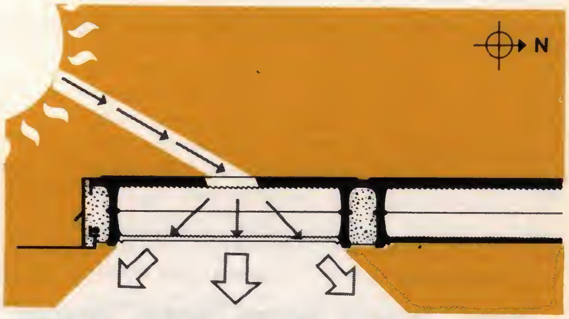
Solar heat transmission of these new Panels, per unit of light transmitted, is lower than that of earlier panels.

How Toplite offers year around sun control



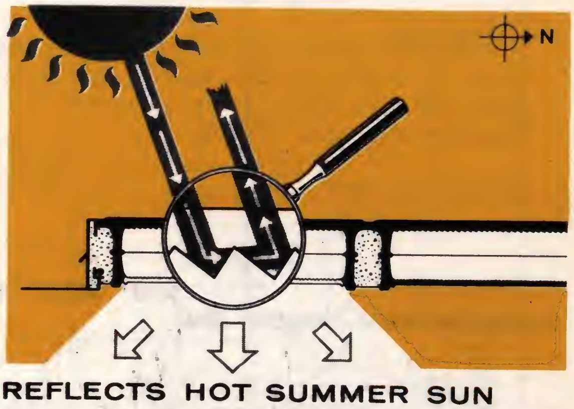
TRANSMITS NORTH LIGHT

Diagram shows how the prism structure of Toplite affords efficient transmission of north light. Maximum transmission of light from the north sky is a highly desirable quality in Toplighting because of its uniformity and low solar heat content.



ADMITS WINTER SUN

Diagram shows how Toplite accepts and transmits winter sunlight. Since the low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again highly desirable.



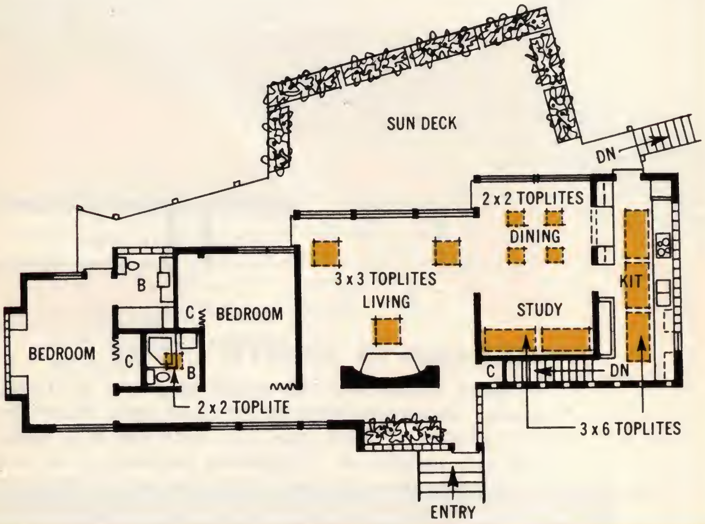
REFLECTS HOT SUMMER SUN

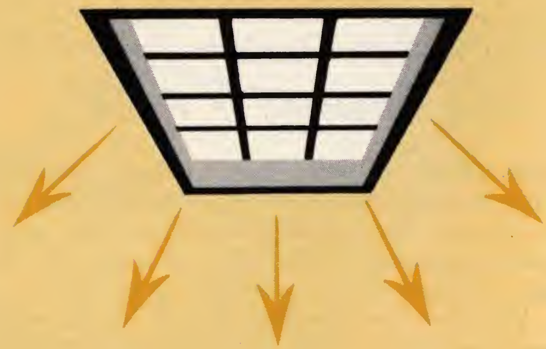
Diagram shows how Toplite reflects the direct light and heat from the sun during the hot, summer months. Other materials which transmit substantial amounts of light from the low winter sun transmit an even higher percentage of light during the hot, summer months.

**The light selecting principle of Toplight is patented. U.S. Pat. No. 2812691*

Toplite Panels offer flexible use of daylighting

homes *Toplite permits entire area to be daylighted. Daylighting interior rooms presents no problem. Perimeter areas may be assigned to living. Bath, utility and other service rooms may be located in interior space. Toplite may be installed on flat or low pitched roofs.*





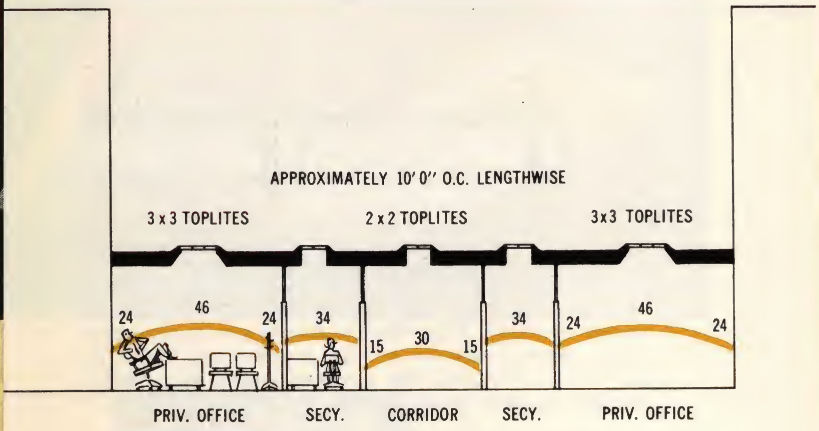
The sketches on these pages illustrate the flexibility of Toplite and show how it may be used (1) as the only source of daylight (shopping center); (2) as a supplement to sidewall fenestration (school); and (3) as a primary source of daylight supplemented by sidewall fenestration (factory).

Toplite panels hug the roof and do not affect the exterior appearance of the building. They permit the designer to completely daylight one story buildings of all types without the increase in ceiling heights or in cubage usually required when monitors or saw-tooth construction is used.

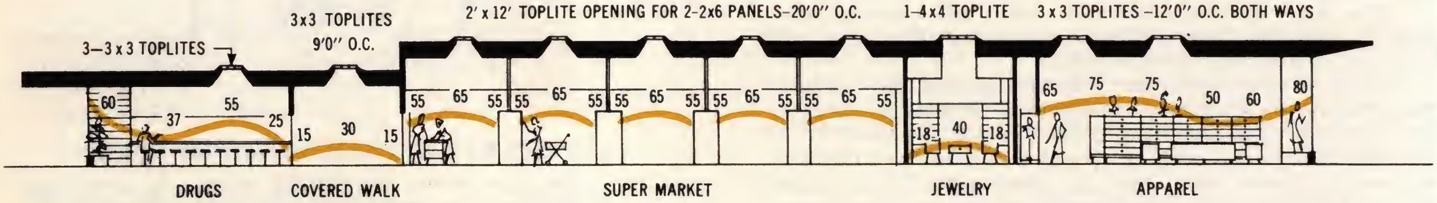
Since Toplite framing is simple, this daylighting method offers the designer almost complete flexibility in planning as perimeter areas no longer must be considered premium areas with respect to daylighting.

In laying out Toplite panels, care should be taken in selecting proper task illumination levels. Since some tasks require higher levels than others, the spacing of Toplite panels may easily be adjusted and can be determined by using the formulae shown on page 6 of this booklet.

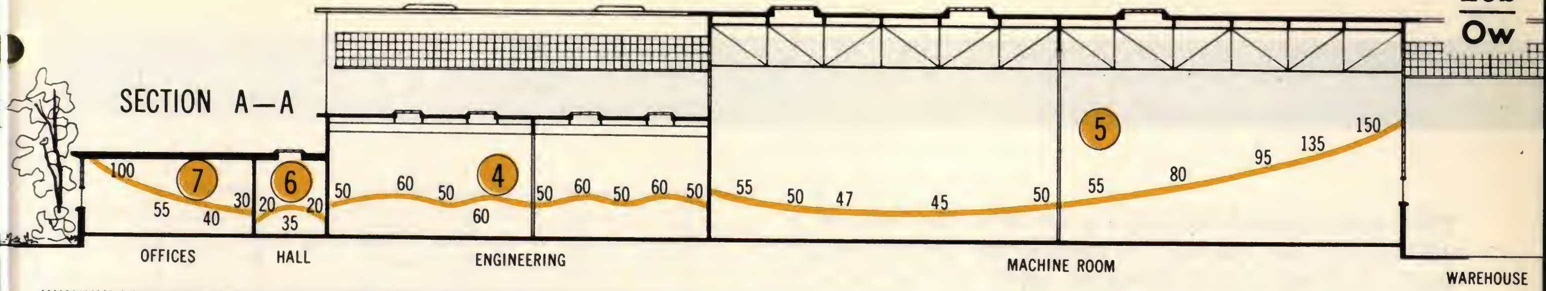
These drawings show various typical applications of Toplite panels for different building types. Illumination curves in foot-candles shown are based on exterior condition of 2500 foot-candles Horizontal Surface Illumination from an overcast sky, interior reflectances assumed to be average.

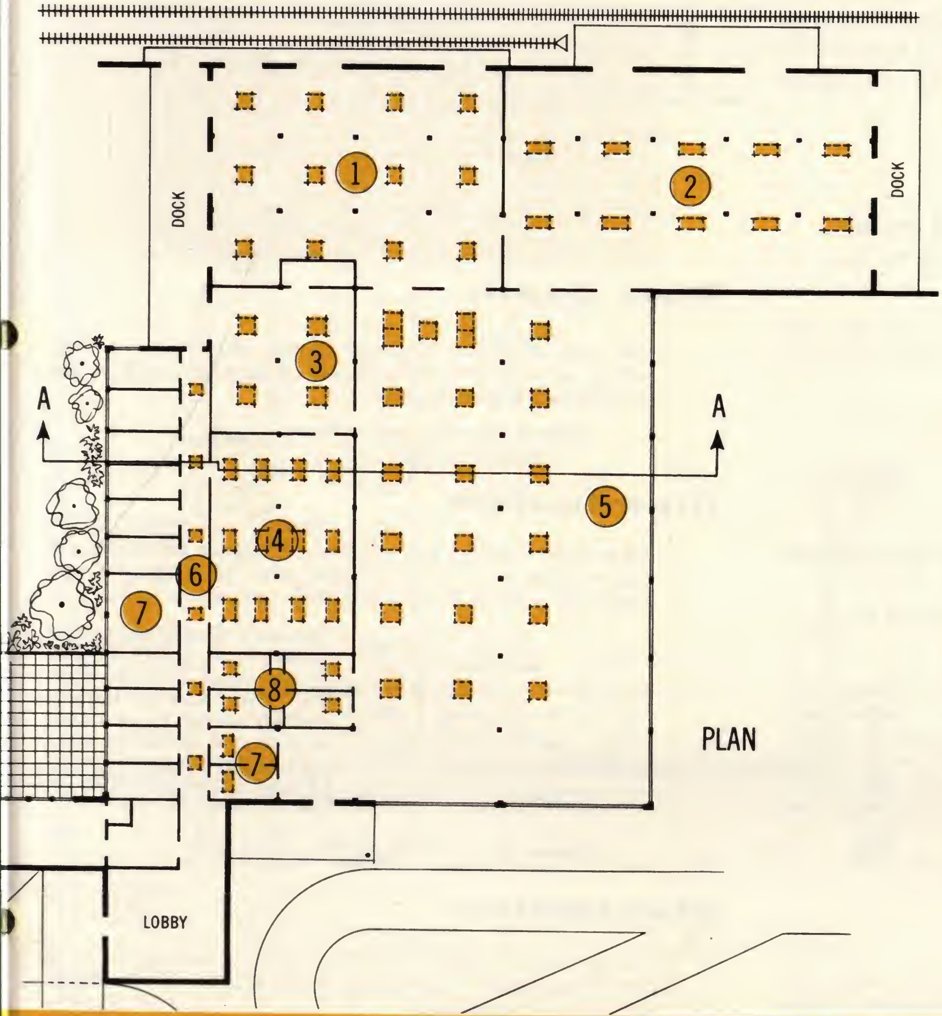


offices *Interior areas of many offices are divided by partitions which obstruct light from sidewalls. One story offices can be uniformly daylighted throughout by use of Toplite.*



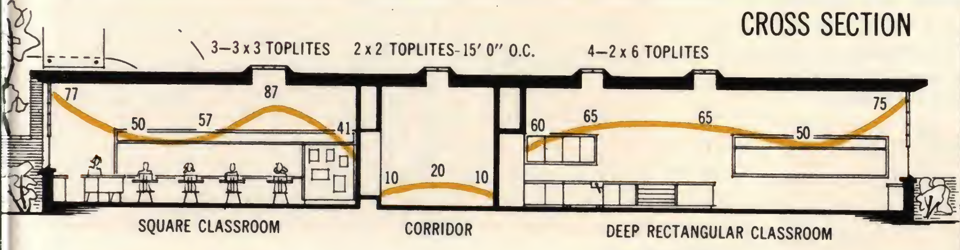
shopping centers *Best daylighted from above. Toplite area dependent on illumination levels required. Complete diffusion of daylight reduces fading of materials. High color temperature of daylight transmitted ideal for color or fabric selection.*



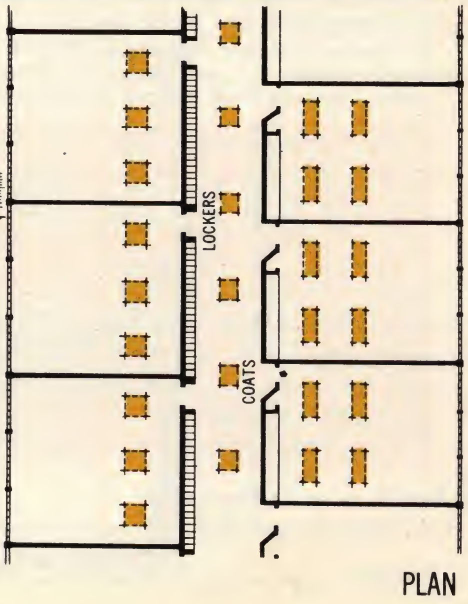


factory *This small plant shows flexibility of Toplite and its ability to meet all daylighting requirements. Predetermined illumination levels dictate Toplite sizes and spacing.*

Area 1 *Raw materials storage warehouse. Sidewall fenestration: 4 courses 12″ glass block continuous; Toplites, 1 4x4 panel centered in each 20′0″ bay. Combination produces average illumination of approximately 20 foot-candles;* **Area 2** *Finished materials storage. Same as Area 1 except that 2x6 Toplite panels are spaced to put 20 foot-candles along aisles;* **Area 3** *Tool Room. No sidewall fenestration. One 5x5 Toplite per bay produces average illumination of approximately 30 foot-candles;* **Area 4** *Engineering Department. No sidewall fenestration. 3x6 Toplites spaced 2 per bay produce approximately 45 foot-candles, for close work;* **Area 5** *Machine Room. Sidewall fenestration: Light-Directing Glass Block above ribbon sash on two sides; One 5x5 Toplite per bay (except perimeter bays). Combination produces approximately 70 foot-candles average. Note increased Toplite areas above work requiring greater illumination;* **Area 6** *Corridor. 3x3 Toplites spaced 20′0″ o.c. produce average illumination of approximately 25 foot-candles;* **Area 7** *Offices. Sidewall fenestration of Light-Directing Glass Block above ribbon sash produces average illumination of approximately 45 foot-candles. No supplement required;* **Area 8** *Toilet Rooms. 1 3x3 Toplite per room produces approximately 12 foot-candles.*



schools *Section shows two examples: (1) 30′ x 30′ classroom; (2) 24′ x 32′ classroom with long axis perpendicular to corridor. Sidewall fenestration glass block above ribbon sash. 3 3x3 Toplites in square room and 4 2x6 Toplites in rectangular room supplement sidewall fenestration. Combination produces illumination as shown. Note good uniformity. Glass block in sidewalls eliminates sky brightness and increases light on ceiling and in upper part of room. Interior brightness ratios much lower than I.E.S. recommended maximum. Toplite is ideal for daylighting large areas such as gymnasiums, cafeterias and multi-purpose rooms.*



PLAN

illumination design data*

The following data is intended as an aid to the designer in the layout and spacing of Toplites for predetermined levels of illumination. Formulae apply to Toplite as a primary light source and as a secondary or supplementary source to sidewall fenestration. This data may be used in designing daylight illumination systems for all types of buildings.

Estimating Areas

1. *When Toplites are primary or only source of daylight*

A. For critical seeing tasks (classrooms, offices, etc.)

$$\text{TOPLITE AREA} = \frac{\text{FLOOR AREA}}{8}$$

This area will provide approximately 60 FC average illumination for 2500 FC HSI Overcast sky with well depth of 12 inches.

B. For noncritical seeing tasks (corridors, storage, etc.)

$$\text{TOPLITE AREA} = \frac{\text{FLOOR AREA}}{30}$$

This will provide approximately 12 FC average illumination.

2. *When Toplites are secondary source of daylight (sidewall fenestration is primary source)*

A. For critical seeing tasks (classrooms, offices etc.)

$$\text{TOPLITE AREA} = \left[\left(\begin{smallmatrix}\text{FLOOR}\\ \text{AREA}\end{smallmatrix}\right) - 2\left(\begin{smallmatrix}\text{FENESTRATION}\\ \text{AREA}\end{smallmatrix}\right)\right] \times .072$$

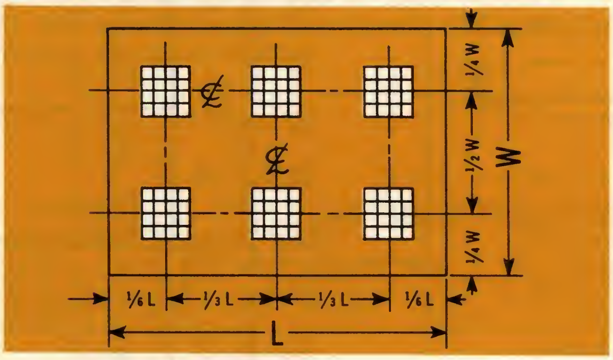
This Toplite area plus sidewall fenestration will provide approximately 50 FC average illumination when the room depth is not over 3 times the height of the sidewall fenestration. When the room depth is greater than 3 times the fenestration height, assume Toplites are primary source, and use Formula 1A above.

Spacing

1. *Toplites as primary source*

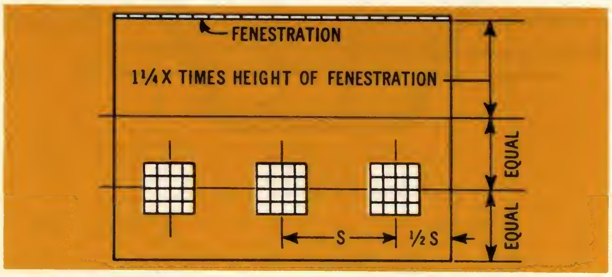
A. For good illumination distribution the center-to-center spacing of Toplites should not exceed their height above the working plane for critical seeing tasks. For noncritical seeing tasks the spacing should not exceed 2½ times the height above the floor.

B. Center-to-center spacing of Toplites equals room length divided by numbers of Toplites along length of room. Distance from wall to Toplite = ½ of spacing.



2. *Toplites as secondary source*

A. Spacing along depth of room: Center Toplites in area remaining after deducting 1¼ X the height of primary fenestration. Spacing along length of room: Same as for primary source above.



Well Depth

For best efficiency Toplites should be as close to the ceiling as practical. An estimate of illumination loss due to well depth is given by:

$$\frac{\text{DEPTH OF WELL IN INCHES} \times 20}{\text{PERIMETER OF WELL IN FT.}} = \%\ \text{LIGHT LOST}$$

Illumination

To estimate, select the number of lumens admitted per square foot of Toplite for the time of year and sky condition desired from this table:

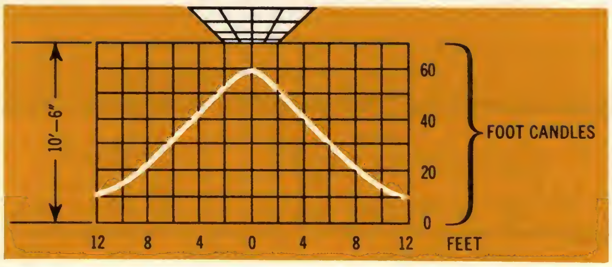
Date	Exterior Illumination	Lumens Sq. Ft.
3/21	Sun and Clear Sky	2,320
6/21	Sun and Clear Sky	2,340
12/21	Sun and Clear Sky	1,220
	Overcast	640

Multiply this figure by the square foot area of Toplite to get total lumens. Subtract per cent of lumens lost in wells from total lumens and divide by floor area to get approximate average illumination in foot-candles.

$$\text{APPROX. AVG. I} = \frac{\text{TOTAL LUMENS} - \text{WELL LOSS}}{\text{FLOOR AREA IN SQUARE FT.}}$$

Distribution

Curve shows typical light distribution for one Toplite four feet square. This curve is for a 2500 FC overcast sky and a 12-inch well.



Notes

1. *Light Wells*

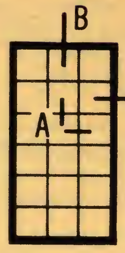
A. Keep shallow as is practical; **B.** Slope sides for better distribution, if possible; **C.** Use light colors—with approximately 85% reflectivity—on sides of wells.

2. *General*

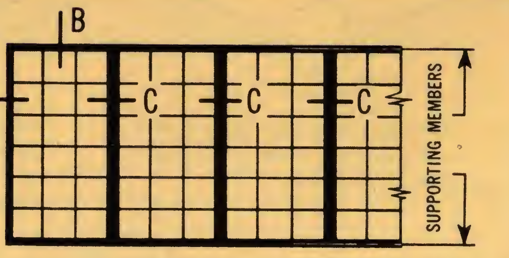
For more information on brightness and distribution, see Pages 14 and 15. Light curves for typical buildings, Pages 4 and 5.

**NOTE:* *Figures apply to standard line of Pre-cast Toplites only. If special aluminum grid Toplite panels are used write for data.*

pre-cast Toplite Panel construction



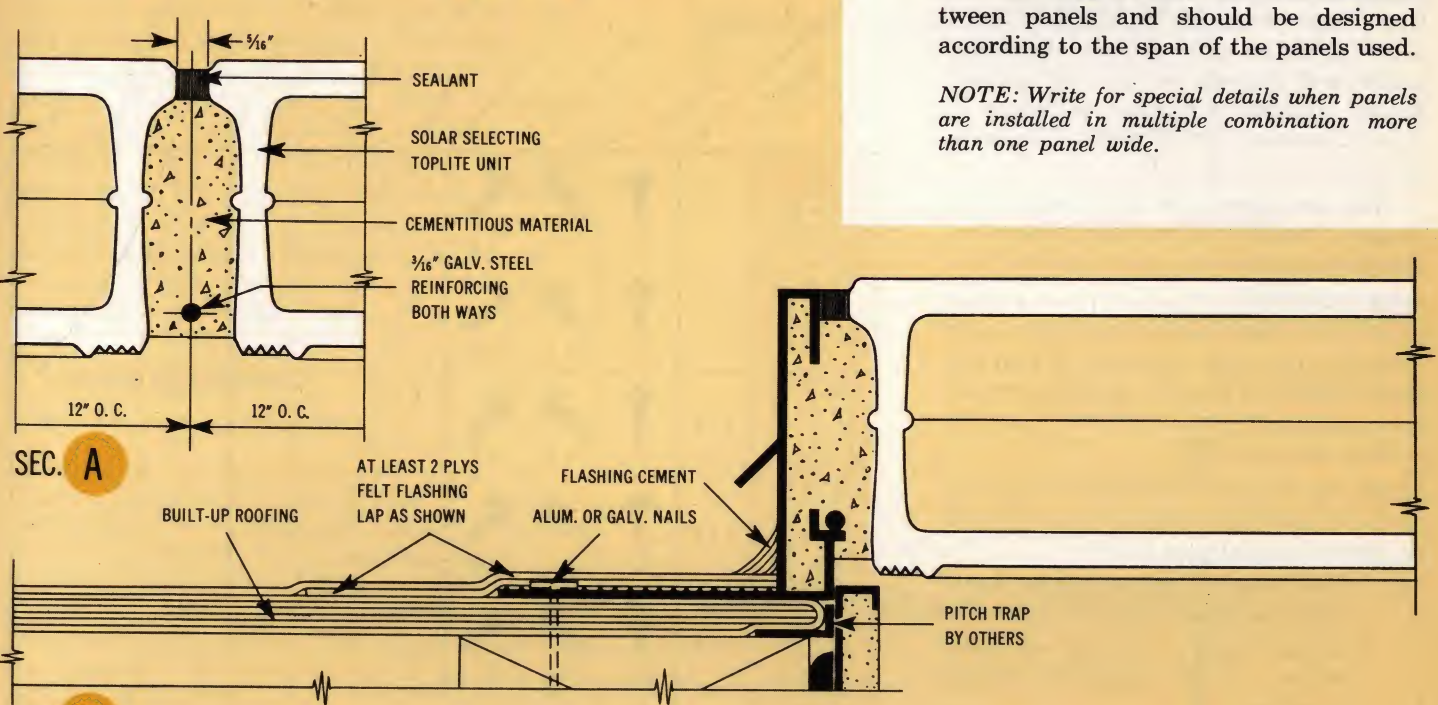
SINGLE PANEL



SINGLE PANELS SIDE BY SIDE OR END TO END

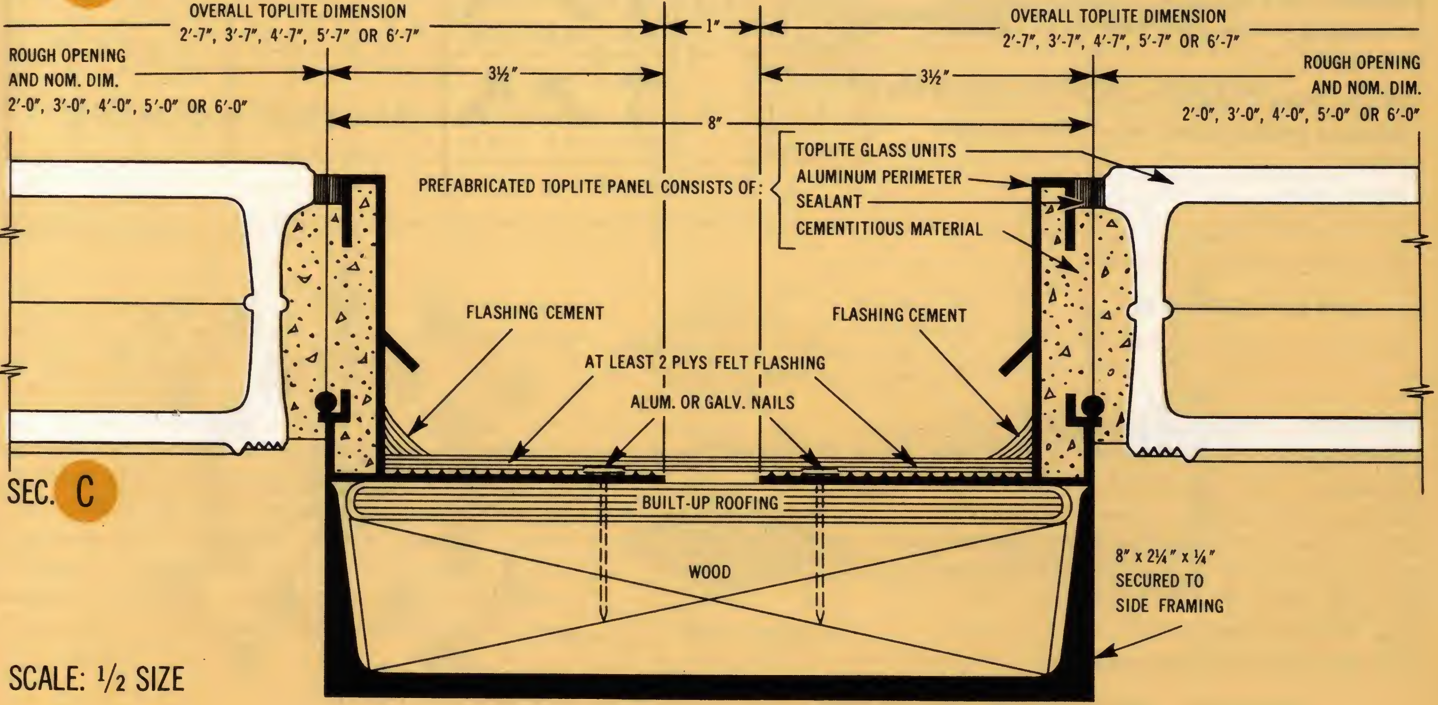
Toplite panels may be used over individual well openings or they may be combined by using several panels over one long well opening. In the latter case structural supporting members are used along the long side of the well and Toplite panels span the opening between them. The intermediate members between panels (Sec. C) support only the roof area between panels and should be designed according to the span of the panels used.

NOTE: Write for special details when panels are installed in multiple combination more than one panel wide.



SEC. A

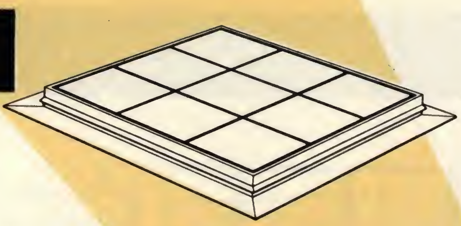
SEC. B


OVERALL TOPLITE DIMENSION
2'-7", 3'-7", 4'-7", 5'-7" OR 6'-7"
1"
OVERALL TOPLITE DIMENSION
2'-7", 3'-7", 4'-7", 5'-7" OR 6'-7"
ROUGH OPENING AND NOM. DIM.
2'-0", 3'-0", 4'-0", 5'-0" OR 6'-0"
3½"
3½"
ROUGH OPENING AND NOM. DIM.
2'-0", 3'-0", 4'-0", 5'-0" OR 6'-0"
8"
PREFABRICATED TOPLITE PANEL CONSISTS OF:
TOPLITE GLASS UNITS
ALUMINUM PERIMETER
SEALANT
CEMENTITIOUS MATERIAL
FLASHING CEMENT
FLASHING CEMENT
AT LEAST 2 PLYS FELT FLASHING
ALUM. OR GALV. NAILS
BUILT-UP ROOFING
WOOD
8" x 2¼" x ¼" SECURED TO SIDE FRAMING

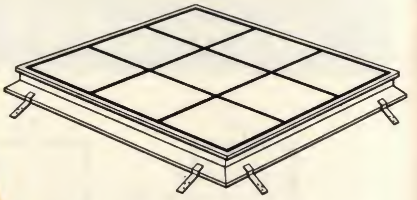
SEC. C

SCALE: 1/2 SIZE

standard sizes



FLANGE TYPE—sits flat on roof with no curb. Apply felt flashings over flange.



CURB TYPE*—Install on conventional curb. Apply felt flashings over roofing and into frame. Install cap cover, corner pieces.

design data

CODE: First letter designates Flange or Curb Type; first number indicates number of blocks on north side of "standard" panels, and northwest side of "45" panels. Second number is number of blocks in other directions. A third letter designates Standard; or 45-A or B.

The structural ribs of Pre-cast Grid Toplite Panels run in both directions, therefore, panels may span any direction.

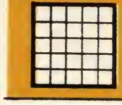
FIELD MARKING: All panels have a large removable label which shows the code number, and north direction. It also has short directions for the general contractor and step-by-step instructions for the roofing contractor.

PITCH: For best performance in control of light and solar heat, Toplite panels should be limited in slope as follows:

1 For locations above 35° N. Latitude, maximum pitch ½″ per foot.
2 Do not slope panels toward south below 35° N. Latitude, where practical.

SHADES: For audio-visual needs a number of shading devices are available. Details on request.

SPECIAL SIZES: Toplite Panels can be furnished in certain other sizes upon special order.

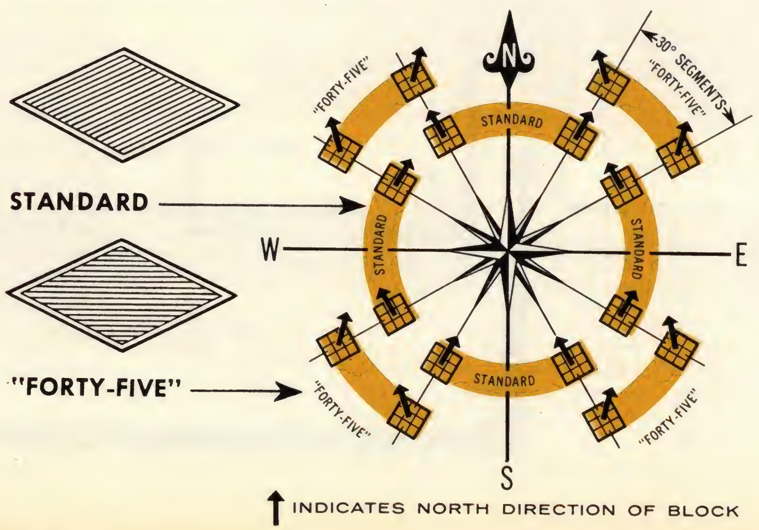
		NORTH DIRECTION AND CODE			USE PREFIX "F"			USE PREFIX "C"		
			"45"							
Sketch	Nominal Size	Standard	A	B	Overall Dimension	Wt., Lbs.-Crated	Wt., Lbs.-Uncrated	Overall Dimension	Weight, Lbs.-Crated	Wt., Lbs.-Uncrated
	2 x 2	↑ 22-S	↗ 22-A	↖ 22-B	2′-7″ X 2′-7″	98	83	2′-3″ X 2′-3″	96	85
	3 x 3	↑ 33-S	↗ 33-A	↖ 33-B	3′-7″ X 3′-7″	225	180	3′-3″ X 3′-3″	216	184
	4 x 4	↑ 44-S	↗ 44-A	↖ 44-B	4′-7″ X 4′-7″	358	288	4′-3″ X 4′-3″	340	293
	3 x 6	↑ 36-S	↗ 36-A	↖ 36-B	3′-7″ X 6′-7″	404	324	3′-3″ X 6′-3″	388	329
	2 x 6	↑ 26-S	↗ 26-A	↖ 26-B	2′-7″ X 6′-7″	278	228	2′-3″ X 6′-3″	266	232
	4 x 5	↑ 45-S	↗ 45-A	↖ 45-B	4′-7″ X 5′-7″	445	358	4′-3″ X 5′-3″	430	364
	5 x 5	↑ 55-S	↗ 55-A	↖ 55-B	5′-7″ X 5′-7″	543	445	5′-3″ X 5′-3″	537	455

Add Prefix "F" or "C"

* FOR CURB TYPE SPECIFICATIONS, SEE PAGES 12 AND 13.

orientation

STANDARD Toplite panels have their prisms at 90° to perimeter, **FORTY-FIVE** Toplites at 45° to perimeter; thus any building orientation is possible. Use standard types in the 60° "cones" to the N., S., E., and W. In the 30° "cones" to the NE, SE, SW, and NW use the "45". This and the direction of "north" arrows is shown in the diagram at right.



↑ INDICATES NORTH DIRECTION OF BLOCK

specifications and construction details

. . . for flange type Toplite Panels

materials

The Pre-cast Toplite Roof Panels shall be made of special, high strength, cementitious materials reinforced with $\frac{3}{16}$″ steel mesh welded 12″ O.C. and galvanized after forming, using Owens-Illinois low brightness light-selecting glass units No. 1180-F. The panels shall be No..... (specify code number indicating type, size and North direction) and shall be clearly marked for proper orientation. The extruded aluminum perimeter frame shall have an integral flange for flashing onto the roof without the use of a curb.

installation

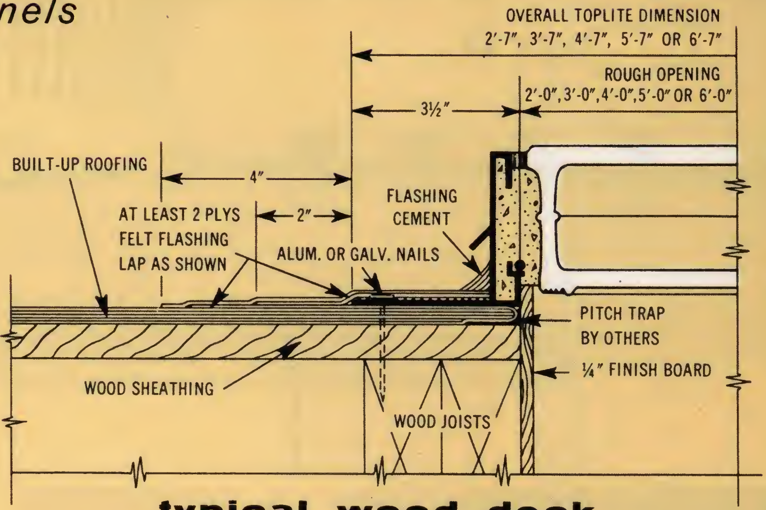
Flange Type Toplite Panels shall be furnished to the contractor completely prefabricated and ready to set on the roofing surrounding the well opening prepared as shown on the drawings. Orient the panels so that the arrow points to the North, or approximately North. The flange shall be secured to the deck by aluminum or galvanized nails or screws located in the holes provided in the flange.

flashing specifications

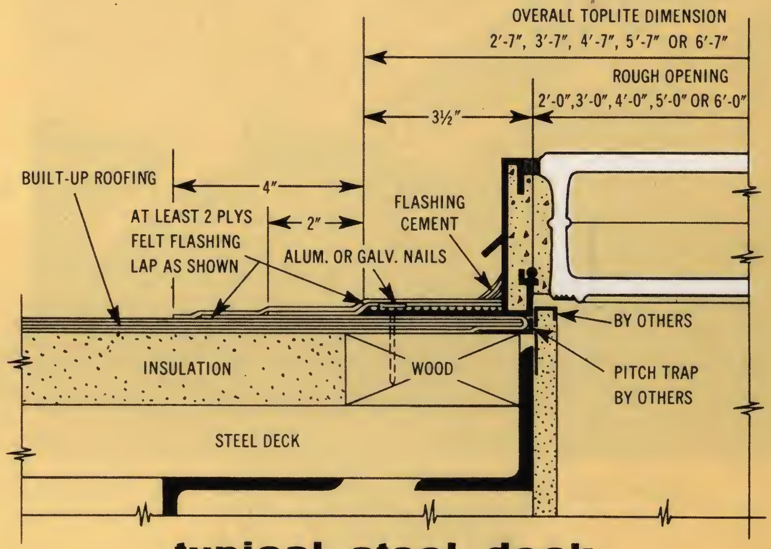
Specify under roofing.

The roofing shall be applied in strict accordance with the architect's and roofing manufacturer's details and specifications. The flange of the Toplite Panels shall be covered with two plies of bituminous-saturated felts. The first ply shall extend two inches beyond the flange and tightly against the aluminum perimeter and shall be well cemented together and to underlying surfaces with cold-applied plastic roofing cement. Trowel a one-eighth inch coat of plastic roofing cement over the last layer of felt. Calk around the base of the aluminum perimeter with roofing mastic.

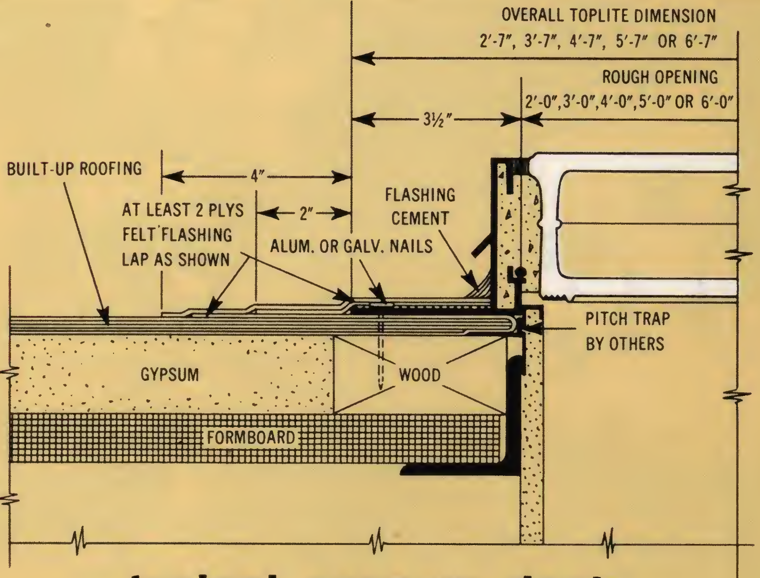
SCALE 3″ = 1′-0″



typical wood deck

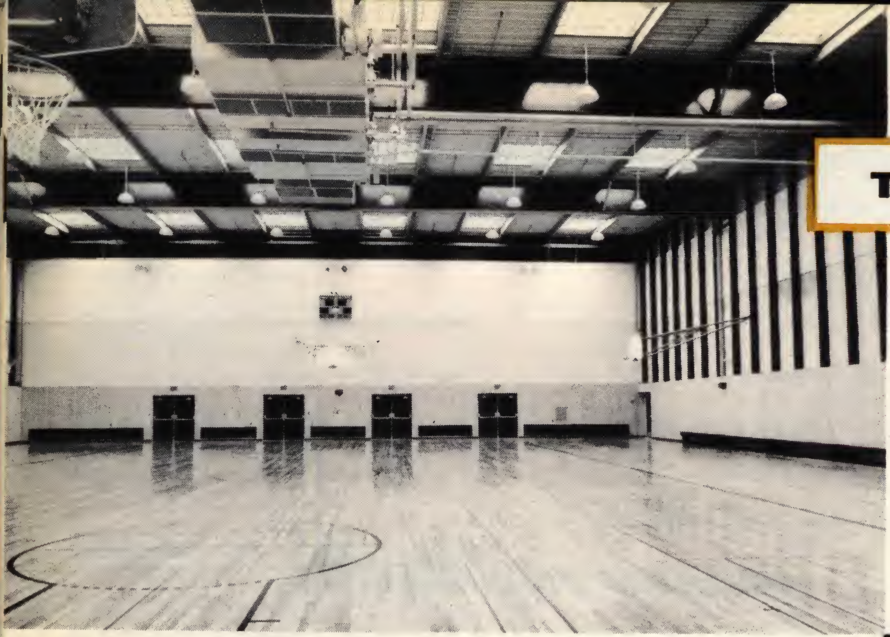


typical steel deck

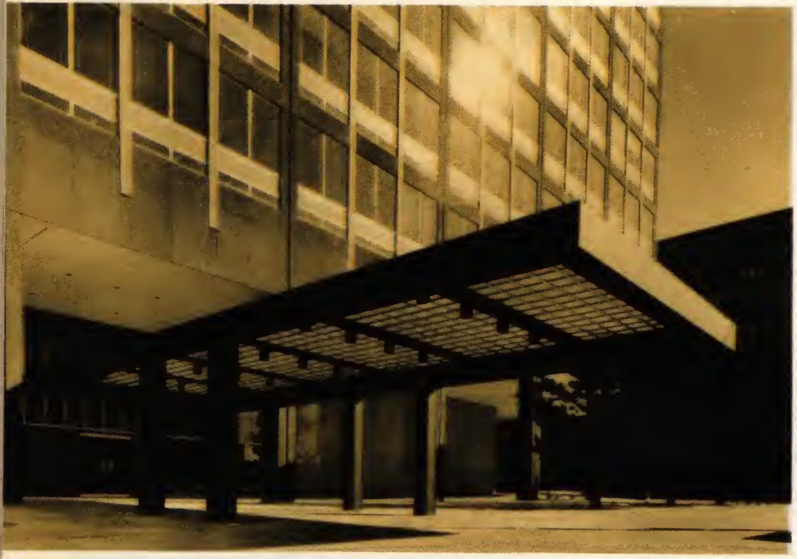


typical gypsum deck

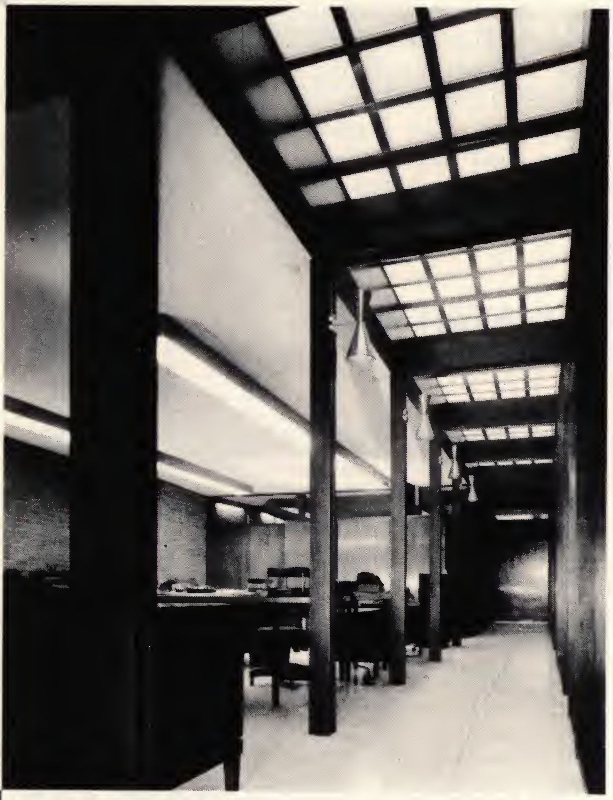
Toplite installations



← *Hillsdale High School,*
San Mateo, California,
John Lyon Reid and Partners,
Architect-Engineers.

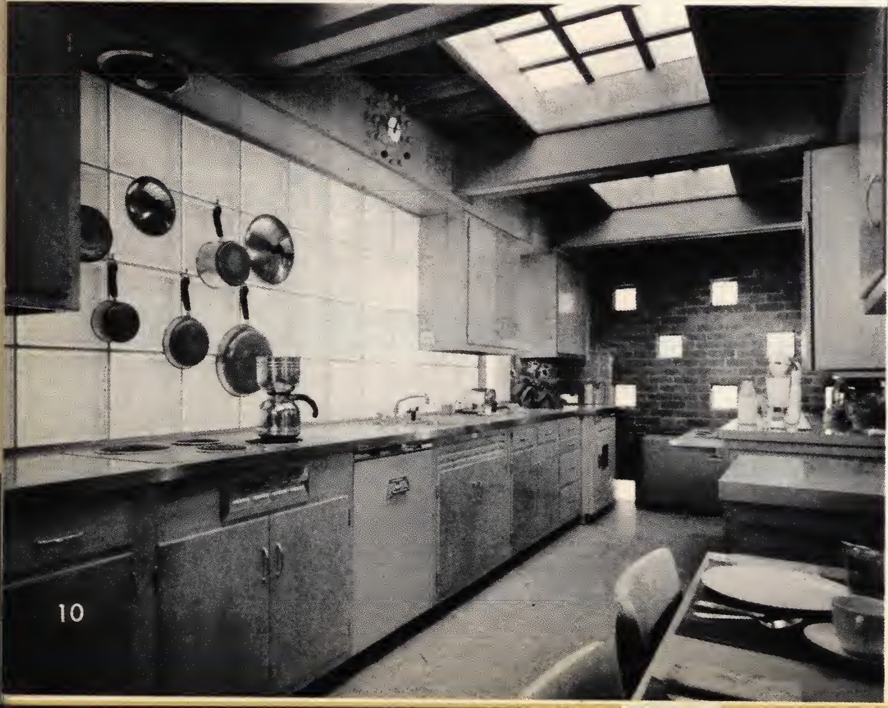


Mile High Center, Denver, Colorado, I. M. Pei, Architect.



↑

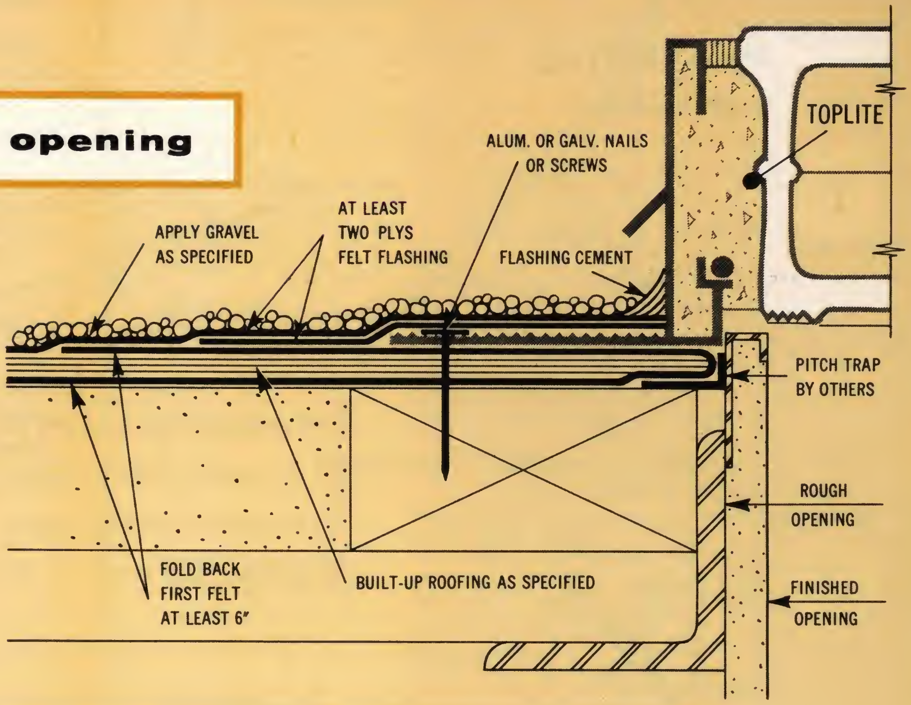
T. A. Schutz Company,
Morton Grove, Illinois,
Seymour S. Goldstein,
Architect.



← *Home of Dr. R. A. Boyd,*
Ann Arbor, Michigan,
Harris Armstrong,
F.A.I.A., Architect.

Toplite installation, step-by-step

preparation of roof opening


TOPLITE
ALUM. OR GALV. NAILS OR SCREWS
AT LEAST TWO PLYS FELT FLASHING
APPLY GRAVEL AS SPECIFIED
FLASHING CEMENT
PITCH TRAP BY OTHERS
ROUGH OPENING
FINISHED OPENING
FOLD BACK FIRST FELT AT LEAST 6"
BUILT-UP ROOFING AS SPECIFIED

Prepare roof opening by providing pitch trap around rough well opening. (Pitch trap furnished and installed by others).

Apply the first roofing felt and extend it approximately 6″ beyond Toplite well opening on all sides. Complete built-up roofing in accordance with architect's specifications, cutting off felts at edge of well. Fold back the 6″ extended felt, cement down, and nail in place.

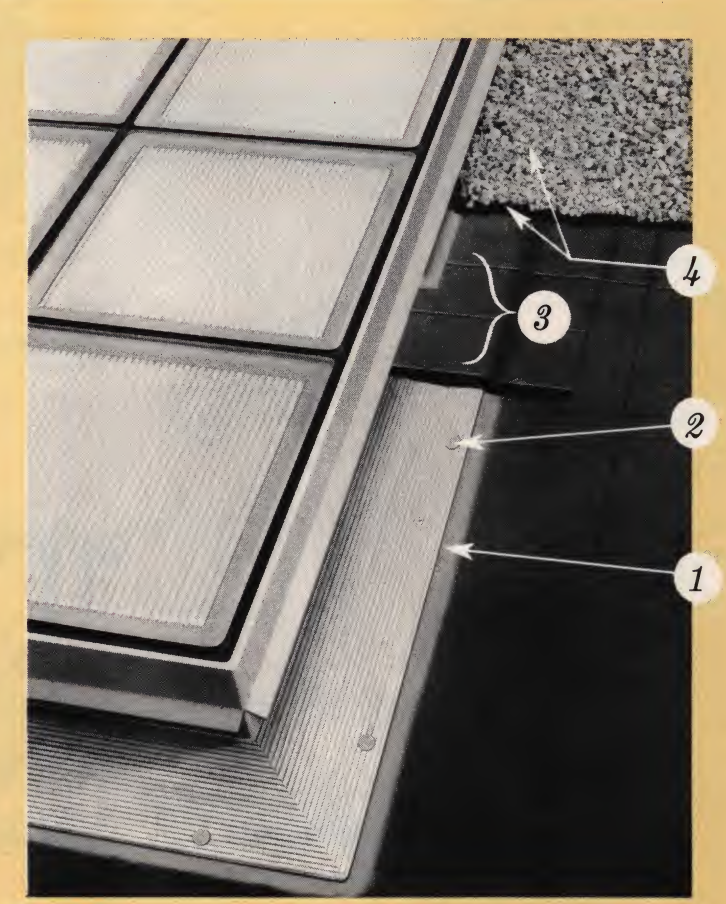
step-by-step installation of Toplite and flashing

1 Keeping back approximately 2″ from the well opening of each Toplite trowel on a heavy coat of flashing cement 2″ or 3″ wide.

2 Orient Toplite panel so that the arrow on label points North and set down on the flashing cement. Center panel over opening and fasten it in place with aluminum or galvanized nails, or screws through holes provided in the flange.

3 Apply at least two plys of felt flashing (see architect's roofing specifications and details) over Toplite flange and built-up roofing, mopping or troweling each in place. The first ply shall extend 2″ beyond the flange and the second ply shall lap 4″ beyond the flange. Both are to be laid tight against the aluminum Toplite perimeter.

4 Trowel a one-eighth inch coat of plastic roofing cement over the last layer of felt and run a bead of flashing cement at the base of the aluminum perimeter. Where specified, embed clean dry gravel, size ¼″ to ⅝″ in the plastic roofing cement.

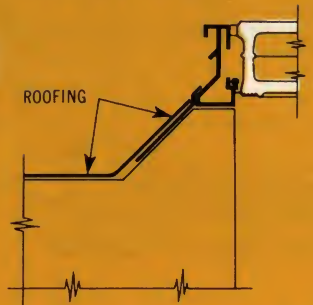


details and specifications for curb type

Flashing

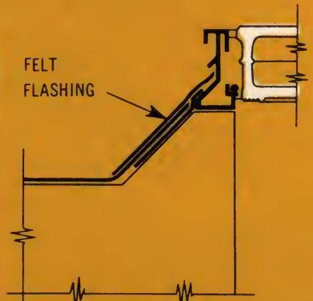
Step-By-Step

1



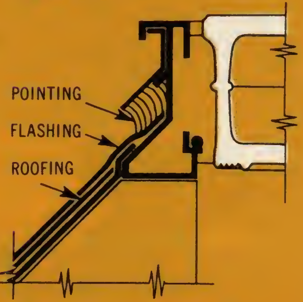
Apply roofing up to top of curb as specified on job.

2



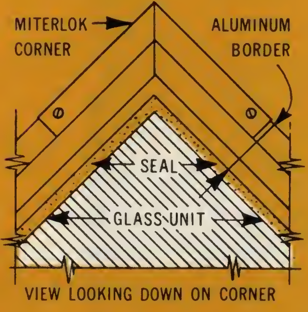
Apply felt flashing on curb and up into Toplite flashing groove.

3

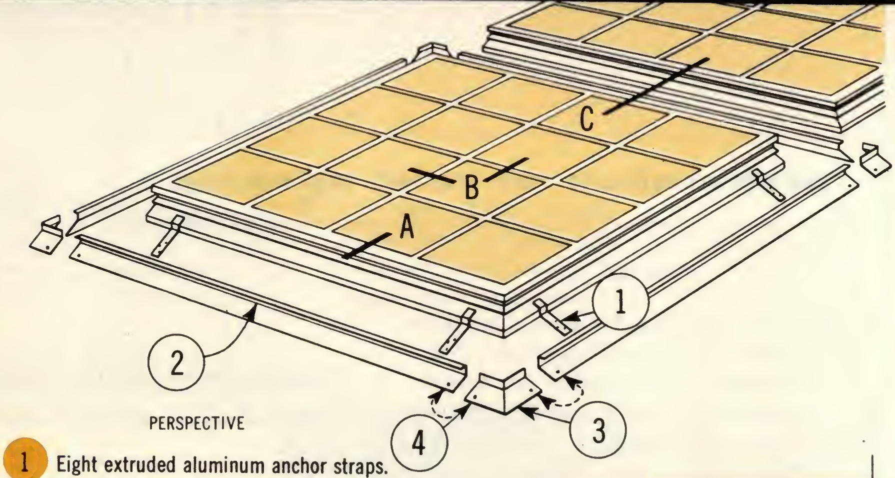


Apply mastic and put Snap-tite cap flashing in place. Point reglet with roofing mastic.

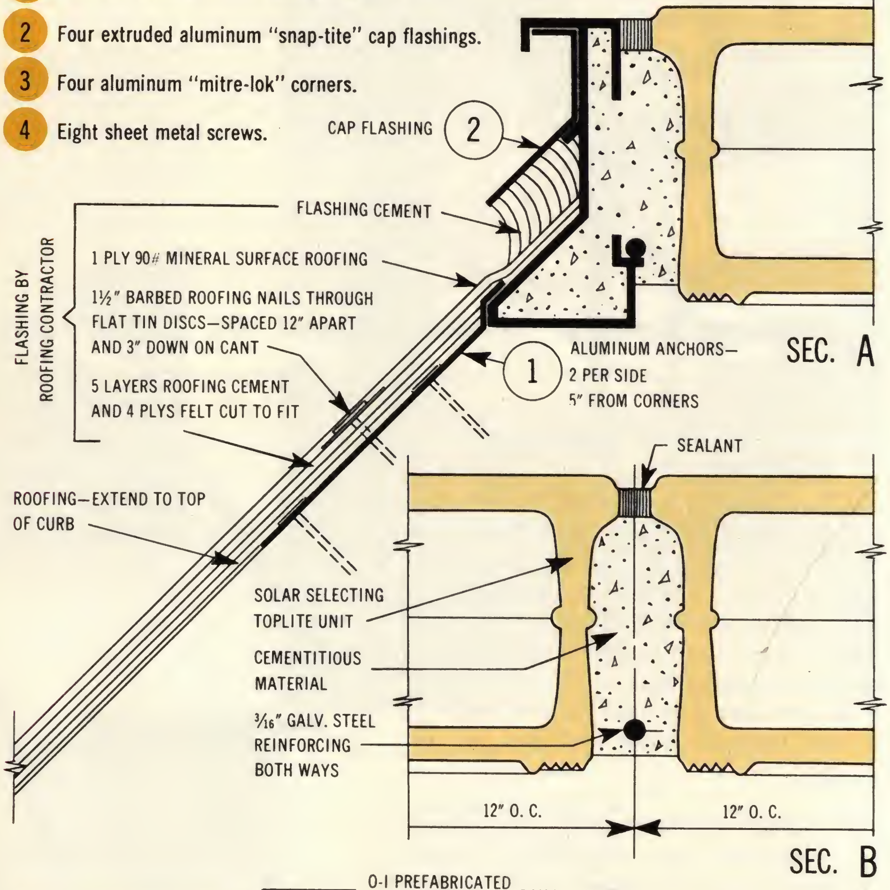
4

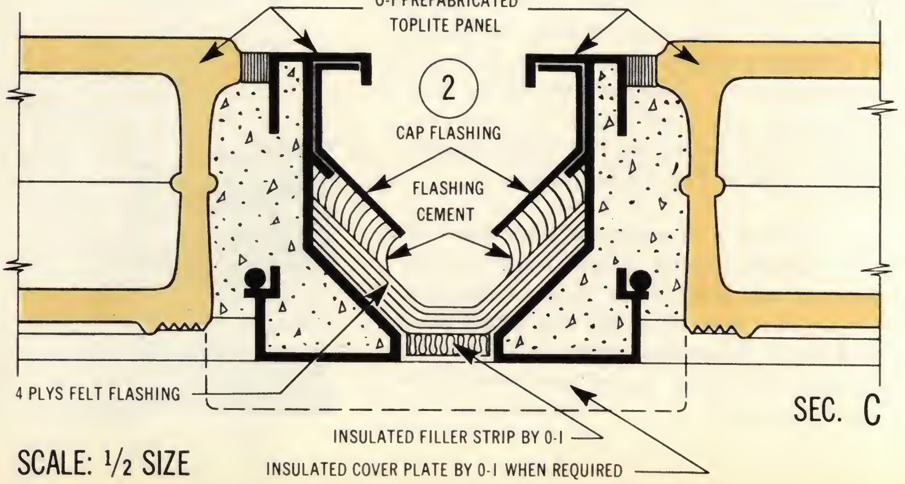


Install Miterlok corner pieces with sheet metal screws.



1. Eight extruded aluminum anchor straps.
2. Four extruded aluminum "snap-tite" cap flashings.
3. Four aluminum "mitre-lok" corners.
4. Eight sheet metal screws.


CAP FLASHING
2
FLASHING CEMENT
1 PLY 90# MINERAL SURFACE ROOFING
1½" BARBED ROOFING NAILS THROUGH FLAT TIN DISCS—SPACED 12" APART AND 3" DOWN ON CANT
5 LAYERS ROOFING CEMENT AND 4 PLYS FELT CUT TO FIT
FLASHING BY ROOFING CONTRACTOR
1
ALUMINUM ANCHORS— 2 PER SIDE 5" FROM CORNERS
SEC. A
SEALANT
ROOFING—EXTEND TO TOP OF CURB
SOLAR SELECTING TOPLITE UNIT
CEMENTITIOUS MATERIAL
3/16" GALV. STEEL REINFORCING BOTH WAYS
12" O. C.
12" O. C.
SEC. B


O-I PREFABRICATED TOPLITE PANEL
2
CAP FLASHING
FLASHING CEMENT
4 PLYS FELT FLASHING
SEC. C
INSULATED FILLER STRIP BY O-I
INSULATED COVER PLATE BY O-I WHEN REQUIRED

SCALE: 1/2 SIZE

Toplite Panels

Curb type is available, where special conditions dictate, at a slight increase in price.

installation

Curb Type Toplite Panels shall be furnished to the contractor completely prefabricated and ready to set on prepared bearings. Check curbs for proper pitch and place panel on curb with arrow pointing to the North, or approximately North. Secure panels to cant strip with two anchors on each side of panel.

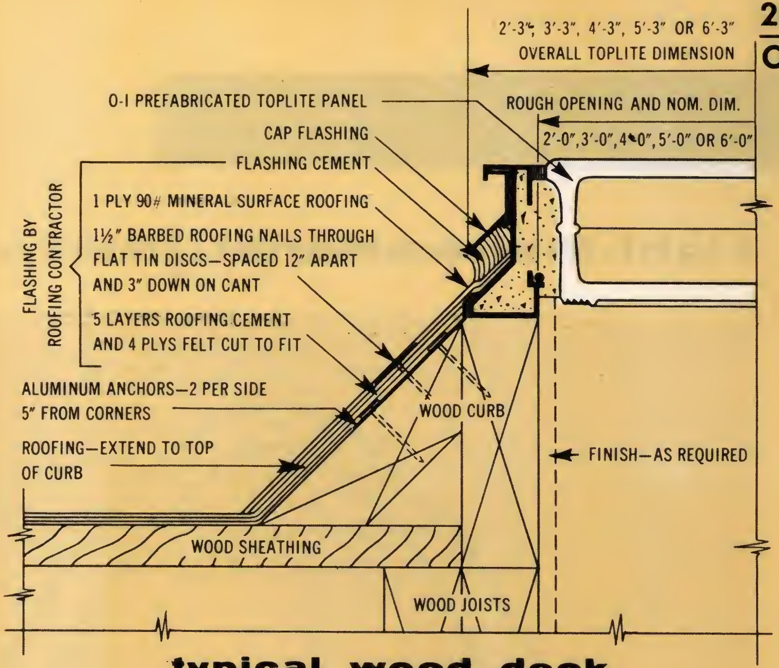
materials

The prefabricated Toplite Roof Panels shall be made of high strength cementitious material, reinforced with 3/16″ steel mesh welded 12″ O.C. and galvanized after forming, using Owens-Illinois low-brightness, light-selecting glass units No. 180-F. The panels shall be No. . . . . (Specify code number indicating type, size and North direction) and shall be clearly marked for proper orientation. Aluminum cap flashings, corner clips and anchors shall be furnished for covering the base flashing and fastening the panels to the curbs.

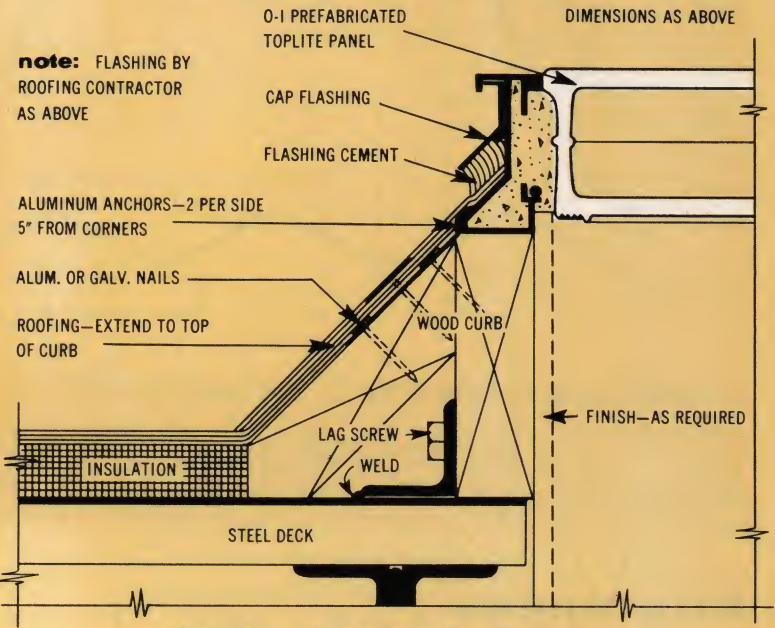
flashing specifications

Specify under roofing.

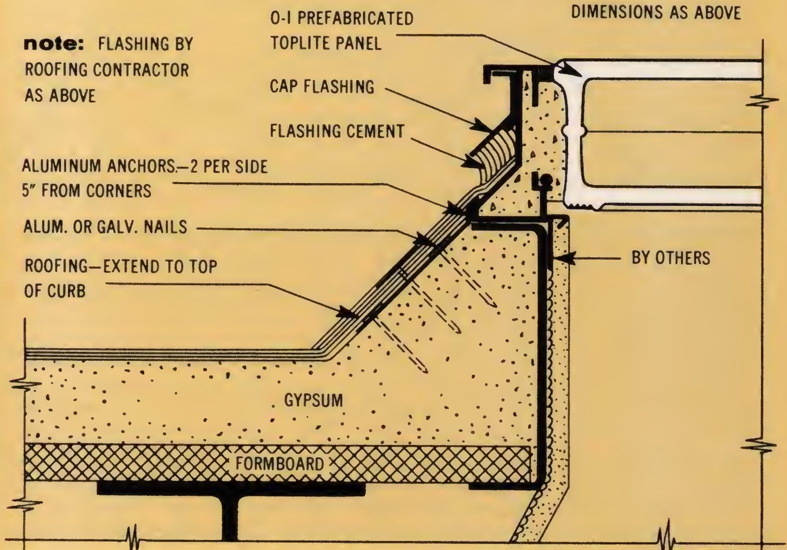
The built-up roofing (as specified) shall be extended up to cant to the base of the Toplite Panel. Apply impregnated flashing felts over the roofing on the cant and extend into the aluminum flashing groove. The felts shall be solidly cemented together and to the underlayment with cold-applied bituminous roofing cement. Nail felts to cant as shown on drawings and cement one ply of mineral surface roofing over the entire flashed area. Apply aluminum cap flashing and corner clips and point between cap flashing and felt base flashing with roofing mastic.


2'-3", 3'-3", 4'-3", 5'-3" OR 6'-3"
OVERALL TOPLITE DIMENSION
O-I PREFABRICATED TOPLITE PANEL
ROUGH OPENING AND NOM. DIM.
2'-0",3'-0",4'-0",5'-0" OR 6'-0"
CAP FLASHING
FLASHING CEMENT
FLASHING BY ROOFING CONTRACTOR
1 PLY 90# MINERAL SURFACE ROOFING
1½" BARBED ROOFING NAILS THROUGH FLAT TIN DISCS—SPACED 12" APART AND 3" DOWN ON CANT
5 LAYERS ROOFING CEMENT AND 4 PLYS FELT CUT TO FIT
ALUMINUM ANCHORS—2 PER SIDE 5" FROM CORNERS
WOOD CURB
ROOFING—EXTEND TO TOP OF CURB
FINISH—AS REQUIRED
WOOD SHEATHING
WOOD JOISTS

typical wood deck


O-I PREFABRICATED TOPLITE PANEL
DIMENSIONS AS ABOVE
note: FLASHING BY ROOFING CONTRACTOR AS ABOVE
CAP FLASHING
FLASHING CEMENT
ALUMINUM ANCHORS—2 PER SIDE 5" FROM CORNERS
ALUM. OR GALV. NAILS
ROOFING—EXTEND TO TOP OF CURB
WOOD CURB
FINISH—AS REQUIRED
LAG SCREW
WELD
INSULATION
STEEL DECK

typical steel deck

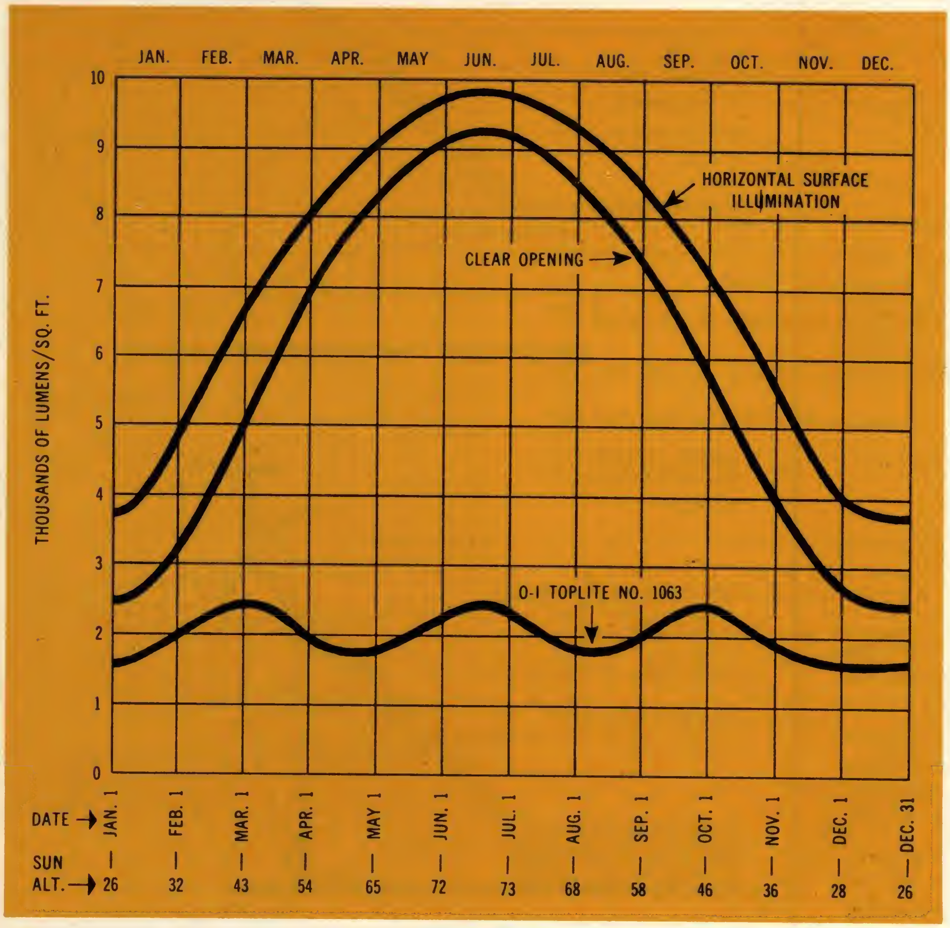

O-I PREFABRICATED TOPLITE PANEL
DIMENSIONS AS ABOVE
note: FLASHING BY ROOFING CONTRACTOR AS ABOVE
CAP FLASHING
FLASHING CEMENT
ALUMINUM ANCHORS—2 PER SIDE 5" FROM CORNERS
ALUM. OR GALV. NAILS
BY OTHERS
ROOFING—EXTEND TO TOP OF CURB
GYPSUM
FORMBOARD

SCALE 3″ = 1′-0″

typical gypsum deck

technical data

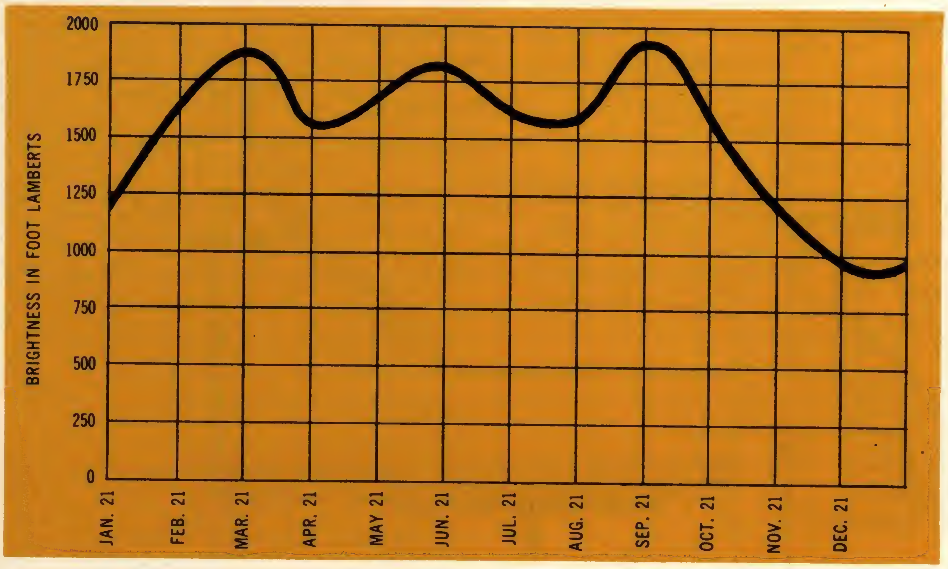
Light Transmission (40° NORTH LATITUDE)



Graph shows lumens transmitted per square foot of Toplite at noon for entire year compared with illumination available on exterior horizontal surface and with illumination from an unglazed clear opening in roof.

Note how clear roof opening provides a great excess of illumination during warm months of the year. This indicates a condition of extreme brightness and solar heat gain. In contrast, Toplite panels eliminate this excessive brightness and solar heat gain by providing a uniform transmission of daylight at about two thousand lumens per square foot.

Brightness (SUN AND CLEAR SKY: 42° N.L.; 12 NOON)

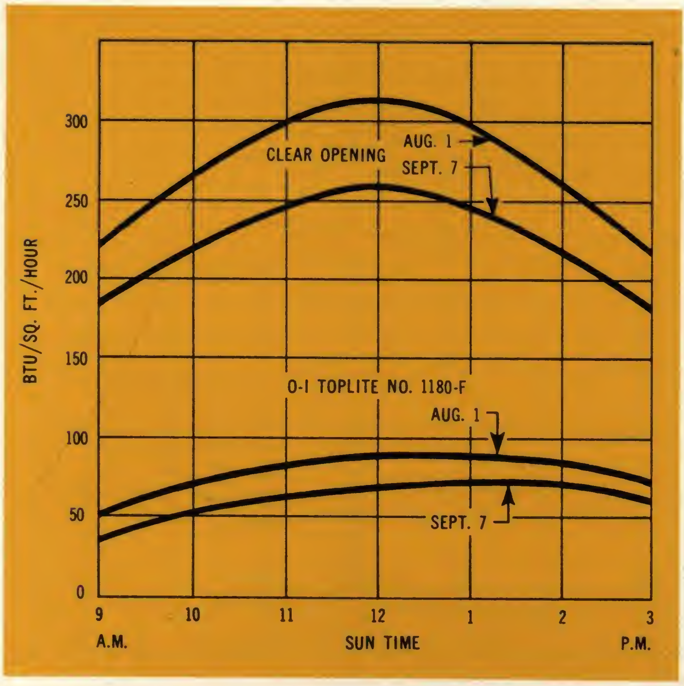


Graph at left indicates that the brightness of Toplite panels is low for all months of the year. Excessive glare is eliminated.

The brightnesses shown are an average for all directions at a forty-five degree viewing angle.

Solar Heat Gain

The graph below shows the calculated total instantaneous rates of heat gain of Toplite panels, No. 1180-F, in BTU per square foot per hour.



The above data are for an air conditioned room with the room temperature maintained at 80° F. and for 40° north latitude and for Aug. 1st and Sept. 7th. Aug. 1st represents the standard ASHAE design day for solar heat gain and Sept. 7 represents the approximate time of maximum heat gain during the school year.

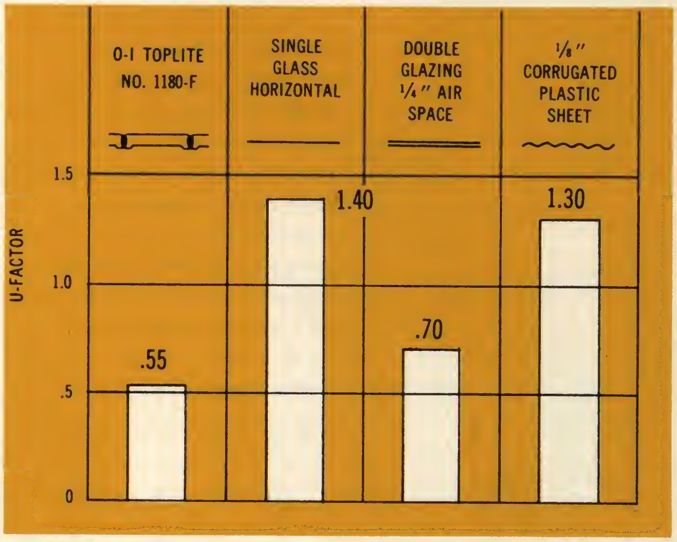
Structural Data

FOR PRE-CAST GRID TOPLITE PANELS

GLASS UNIT SIZE	11 11/16″ x 11 11/16″ x 3 11/16″ (TOP FACE)
MODULAR UNIT SIZE	12″ x 12″
APPROXIMATE WEIGHT	18 LBS. PER SQ. FT.
LIVE LOAD	40 LBS. PER SQ. FT.
MAXIMUM SPAN (ALUMINUM GRID)	6′
MAXIMUM AREA (PREFABRICATED)	28 SQ. FT.

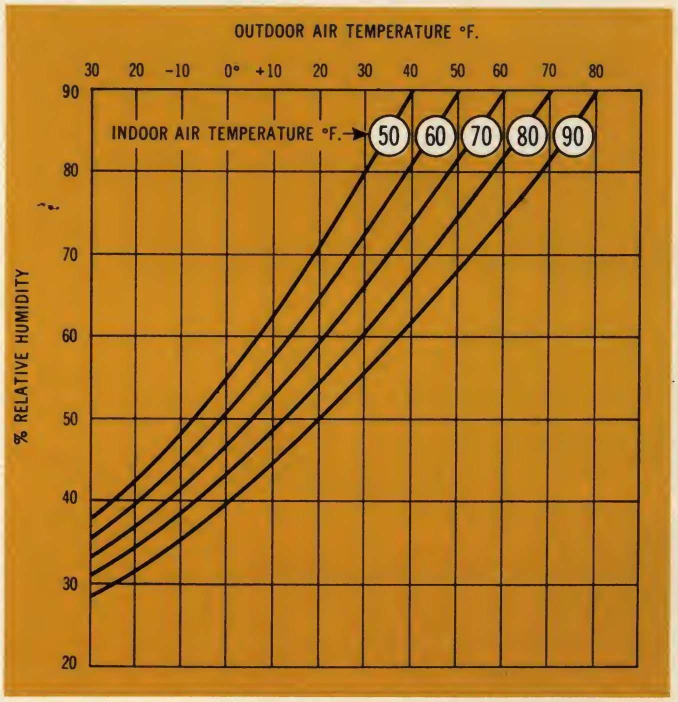
Heat Transmission

Coefficients of heat transmission, "U", for skylight and roof materials expressed in BTU/hour/square foot/degree F. difference in temperature between the air on the two sides.

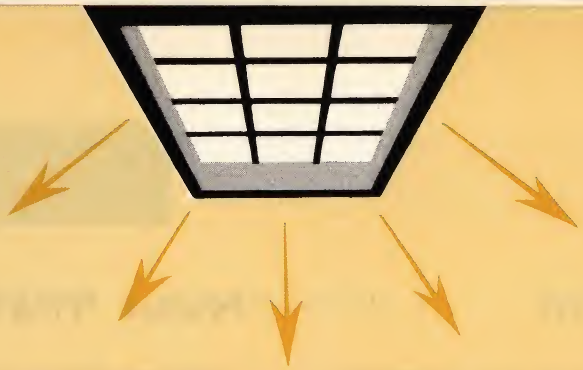


The U-factor for Toplite panels is the average value for the entire Toplite panel including glass and joints. It includes a 15 MPH wind on the exterior side.

Surface Condensation



This chart shows the outside air temperatures which are required to produce condensation on the room side of Toplite panels for various room air temperatures and relative humidities. These curves are based on a calculated "U" factor of .55.



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Dallas, Texas...............404 Tower Petroleum Building, RIverside 7-4307
Milwaukee, Wisconsin...715 North Van Buren, Room 728, BRoadway 1-0760
Minneapolis, Minnesota.................760 Rand Tower, FEderal 3-2217
Montclair, New Jersey...............22 South Park Street, PIlgrim 6-6600
Philadelphia, Pennsylvania...........1931 P.S.F.S. Building, WAlnut 2-0432
Pittsburgh, Pennsylvania.............Two Gateway Center, EXpress 1-1467
San Francisco, California.........1485 Bayshore Boulevard, JUniper 6-3234
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Seattle, Washington........................824 John Street, SEneca 0775
Toledo, Ohio......................Owens-Illinois Building, CHerry 2-6543

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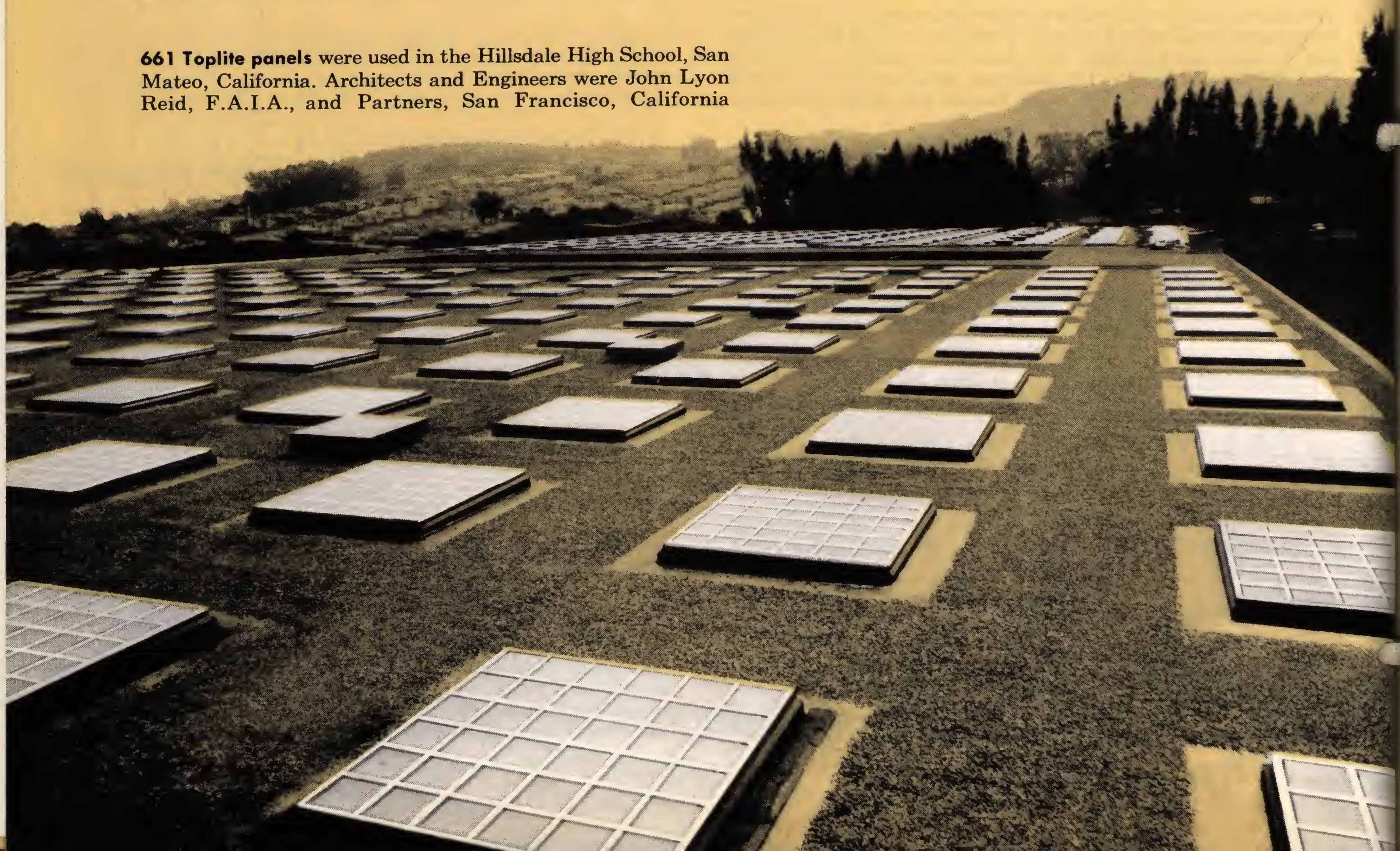
TOPLITE ROOF PANELS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

661 Toplite panels were used in the Hillsdale High School, San Mateo, California. Architects and Engineers were John Lyon Reid, F.A.I.A., and Partners, San Francisco, California



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